Tone Control Bypass

Improve Drive & Linearity

PAS

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If you do not use them, bypassing the tone controls is, perhaps, the simplest modification you can make to your PAS 2/3 that results in a measurable, and often audible, improvement in performance. The primary benefits include increased drive capability and improved linearity. As well, the already very low distortion of the PAS 2/3 is further reduced at the low end of the audio band. For more insight into why the modification is so effective, see the article on PAS Compatibility Issues.

Note that the PAS 3X incorporates special tone control potentiometers which are automatically bypassed when set to the center position. This article describes the process of modifying the PAS 2/3 to, essentially, emulate a PAS 3X with its tone controls set to the center, bypassed position.

Tone Control Bypass

Modified Schematic

Fig. 1 displays the schematic of the line stage left channel with the bypass modifications highlighted in red.

The bass potentiometer is bypassed by jumpering all three terminals together and adding a 1uF capacitor in series with the connection to eyelet 5 on the PC-5 board. The capacitor (included in the PAS 3X) becomes a necessity to prevent elevated DC voltage from appearing at the output jack. The source of the DC voltage is the cathode of the first stage, where it appears as 1.45VDC. From there it has a path to the output jack through the 47K feedback resistor and the 750K bass potentiometer. In stock configuration, this allows about 100mV DC to appear at the output, however with the bass potentiometer bypassed, the voltage rises to about 800mV. While power amplifiers are typically AC coupled at the input, there are exceptions, including most of Dynaco's own tube PA's. While they would tolerate 100mVDC, increasing that to 800mVDC could result in stability problems, thus the additional coupling capacitor.

Note that it is the bypassing of the bass control that results in the improvement of drive capability, and lower distortion, at the low end of the audio band where the PAS 2/3 has difficulty driving lower impedance loads.

The treble potentiometer is bypassed by simply disconnecting the wire to the center (wiper) terminal. Bypassing the treble control does not impact the drive capability or distortion, but does guarantee the flatest high frequency response.

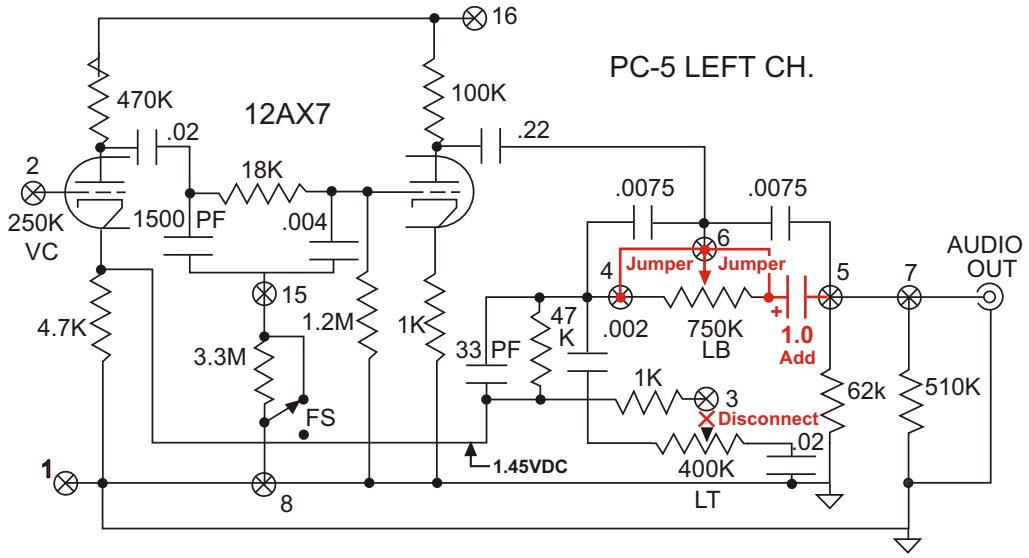

Fig. 1 Tone Control Bypass Schematic

Bypass Modification Procedure

Refer to Fig. 2 to implement the tone control bypass modification.

Treble Bypass

Disconnect the wire from terminal 2 of the LT potentiometer. Be sure to insulate the free end of the wire.

Disconnect the wire from terminal 2 of the RT potentiometer. Be sure to insulate the free end of the wire.

Although not necessary, if desired, the wires may also be disconnected at their respective connections at eyelets 3 and 10 on the PC-5 board and removed entirely.

Bass Bypass

Disconnect and remove the wire between eyelet 5 on the PC-5 board and terminal 3 on the LB potentiometer.

Disconnect and remove the wire between eyelet 12 on the PC-5 board and terminal 3 on the RB potentiometer.

Connect a *1uF capacitor between eyelet 5 on the PC-5 board and terminal 3 on the LB potentiometer.

Connect a *1uF capacitor between eyelet 12 on the PC-5 board and terminal 3 on the RB potentiometer.

*Note: Dynaco used 1uF 15V electrolytic capacitors in the PAS 3X, however quality film types are preferable and recommended. If using electrolytics, be sure to note the correct polarity as indicated in Fig. 2.

Jumper together terminals 1, 2 and 3 on the LB potentiometer.

Jumper together terminals 1, 2 and 3 on the RB potentiometer.

The bypass modification is now compete.

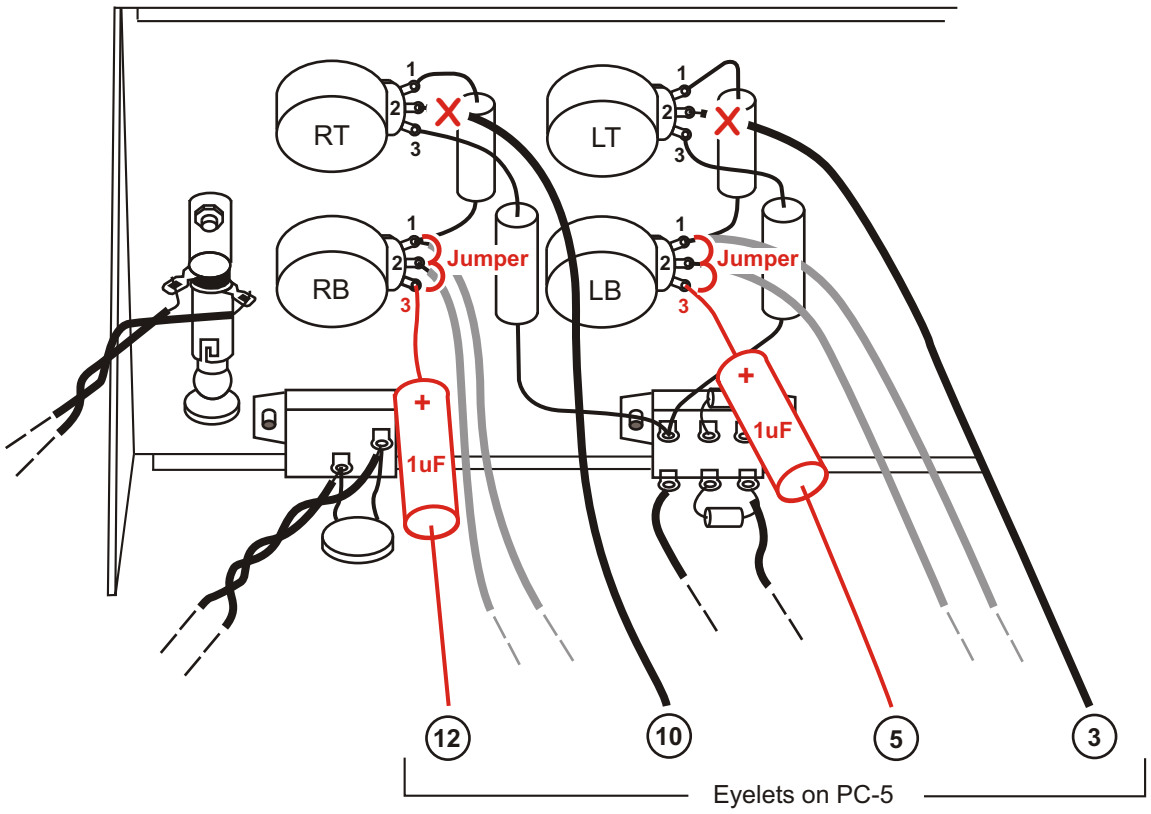

Fig. 2 Tone Control Bypass Modification